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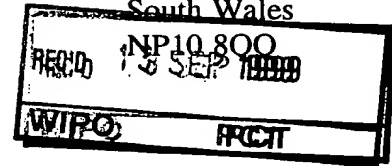
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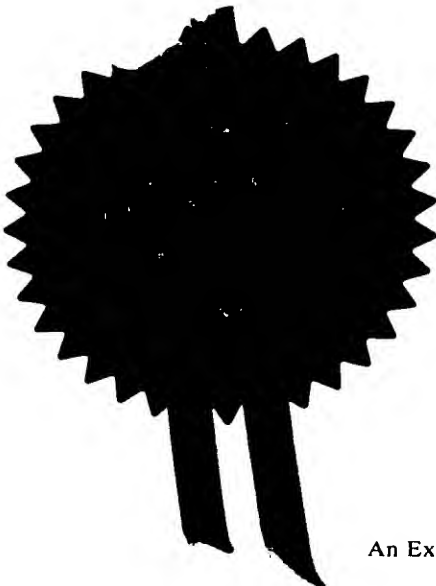
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7473879001

4. Title of the invention

BAGS OF EASY OPEN CONSTRUCTION

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

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3 June 1999

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BAGS OF EASY OPEN CONSTRUCTION

The present invention relates to bags or sacks, and in particular to plastic bags or sacks having an improved easily openable construction.

The bags of the present invention commonly take the form of sacks and are primarily intended for industrial processing uses within and between factory premises, most especially in the food processing industry. The bags of the invention may also be suitable as the external packaging of certain solid and liquid consumer products (such as detergents). The bags may also find application in home delivery services where it is sometimes necessary to return products by post to a supplier.

Plastic bags of many different types are known, but one particular problem has been in providing bags (especially industrial sacks) which incorporate an easily openable closure and which are easily and relatively cheaply manufactured, easy and reliable to use and suitable for containing relatively heavy materials. The present invention seeks to provide a bag which has a closure capable of meeting these requirements.

The bags of the present invention are particularly suitable for containing bulk products in the form of powders, granules or liquids. Examples of such products include bulk chemicals and bulk ingredients such as are used in human and animal foodstuffs and in household products such as washing powders and washing liquids; foodstuffs and household products; and garden products such as peat or compost. In the food industry, plastic

bags and sacks are especially used in the transport of foods, ingredients or partially prepared food products around or between premises. In the context of this specification, bulk product may include retail consumer products such as liquid and solid detergents and food ingredients for which the bags of the invention may form the external packaging.

Accordingly, the invention provides a plastic bag comprising first and second confronting side walls having substantially coincident end boundary edges and a closure flap overlying an end region of the first side wall, depending from the end boundary edge of the second side wall, including a first fold substantially parallel to and adjacent to the end boundary edges and having a region which is peelably attached to the first side wall, the first and second side walls being attached along their side edges and wherein at least a portion of the closure flap may be peeled away from the first side wall across the peelably attached region to expose the interior of the bag such that the first side wall remains functionally intact.

In especially preferred variations of the invention said portion which may be peeled away is defined by at least one line of weakness in the closure flap extending through the peelably attached region and along which the closure flap is torn to expose the interior of the bag.

The invention also provides a plastic bag comprising first and second confronting side walls having substantially coincident end boundary edges; and

a closure flap overlying an end region of the first side wall, depending from the end boundary edge of the second side wall, including a first fold substantially parallel to and adjacent to the end boundary edges and having a region which is attached to the first side wall; the first and second side walls being attached along their side edges; and wherein the closure flap includes at least one line of weakness defining a portion of the flap which does not include any part of the region which is attached to the first side and which can be opened by tearing along the line of weakness to expose the interior of the bag.

In one form of the invention the closure flap includes a line of weakness in the form of an arc extending from points adjacent the end boundary edge of the first side wall towards the end edge of the cover flap distant from the first fold.

Preferably the plastic bag of this variation includes at least one finger hole formed in the closure flap on the line of weakness by means of which the closure flap may be gripped for tearing.

In a most preferred embodiment of the invention said portion which may be peeled away is defined by at least two lines of weakness in the closure flap along which the closure flap is torn to expose the interior of the bag.

In a preferred variation, the lines of weakness terminate in one or more finger holes formed in the closure flap, by means of which the closure flap may be gripped for tearing.

The lines of weakness desirably extend from the edge of the closure flap distant from the first fold through the peelably attached region to the end boundary edge of the first side wall and may preferably be substantially straight and substantially parallel to the side edges of the bag.

Alternatively, the ends of the lines of weakness proximate the end boundary edge of the first wall may be spaced further apart than the ends of the lines of weakness at the end of the closure flap.

In another preferred variation the ends of the lines of weakness at the end edge of the closure flap are so spaced apart as to define a finger tab by means of which the closure flap may be gripped for tearing.

In still another variation of the invention, the closure flap is sealed to the first side wall along portions of its end edges extending from respective lines of weakness to the side wall edges.

It is particularly preferred that the closure flap is peelably attached to the first side wall by means of a peelable adhesive.

Alternatively the closure flap may be peelably attached to the first side wall by means of a peelable heat weld or peelable heat sealed region.

One particularly advantageous form of the invention provides that the line or lines of weakness are so shaped that the portion of the closure flap defined thereby

adopts the shape of a dispensing spout when torn along the line or lines of weakness.

In a very advantageous construction, the lines of weakness are perforations formed in the closure flap.

- 5 In yet another preferred variation of the invention, the bag further comprises a second flap depending from the end boundary edge of the first side wall along a second fold and extending into the interior of the bag.

- 10 Preferably, the second flap is attachable by means of an adhesive to the inside of the second side wall, which adhesive is desirably a peelable adhesive.

- 15 In a most preferred form of the invention there is no path across the portion of the closure flap which may be peeled away from the boundary of the said portion nearest to the end boundary edge of the first side wall to the boundary of the said portion distant from the first fold which does not pass through a peelably attached region.

- 20 Additionally, it is preferred that a path along the first wall substantially parallel to and adjacent to the end boundary edge thereof lies entirely in a peelably attached region, at least within the peelable portion of the closure flap.

- 25 In still another preferred variation of the invention the bag is further provided with a third flap overlying and peelably attached to the first or second side wall, which third flap depends from a second end boundary edge of the second or first side wall at the end of the bag distant from the first fold and includes a third fold

substantially parallel to and adjacent to the said second end boundary edge.

For a better understanding of the invention, and to show how the same may be carried into effect, reference will
5 be made (by way of example only) to the following drawings, in which,

Figure 1 is a schematic perspective view of a bag according to one variation of the invention.

Figure 2 is a sectional view along line A-A of Figure 1.

10 Figure 3 is a schematic plan view of a bag according to another variation of the invention illustrating one line of weakness in the closure flap.

Figure 4 is a schematic plan view of a bag according to another variation of the invention.

15 Figure 5 is a schematic plan view of a bag according to another variation of the invention illustrating two lines of weakness in the closure flap.

Figure 6 is a schematic plan view of a bag according to another variation of the invention.

20 Figure 7 is a section along the line D-D of Figure 6.

Figure 8 is a section along the line B-B of Figure 6.

Figure 9 is a plan view of the bag of Figure 6 in an open condition.

Figure 10 is a plan view of the bag of Figure 6 in an
25 open condition.

Figure 11 is a schematic plan view of a bag according to another variation of the invention sealable at both ends.

Figure 12 is a sectional view along the line E-E of Figure 11.

5 In this application, the bags of the invention are described and defined in relation to their flat condition before filling. That is, the bags are described and defined in a configuration in which the side walls lie flat against each other with substantially no gap there
10 between. Clearly, as the bag is filled with product, the side walls of the bag become separated and the configuration of the bag is changed.

In Figures 1 to 12, the bag 200 comprises a bag portion 200A and a closure flap 205. The bag portion 200A is
15 formed from a first side wall 201 and a second side wall 202. The walls 201 and 202 are confronting in that they lie one over the other. Walls 201, 202 are joined together along their side edges 203, 204 by for example heat seals (the heat seals along side edges 203 and 204
20 are not specifically illustrated for reasons of clarity). In an alternative configuration, the walls of the bag portion may be formed as a tube so that there is no distinct joint or seal along their sides. The closure flap 205 overlies an end region of the first side wall
25 201 and depends from the second side wall 202 at the end boundary edge 206 of the second side wall 202. The closure flap 205 may be attached to the second side wall by means of a joint but preferably, the closure flap 205 is formed integrally with the second side wall 202 and
30 depends from the second side wall 202 by means of a fold

207. (In Figures 2, 7, 8 and 12, the spacing between the first side wall 201, and the second side wall 202, and the closure flap 205 is exaggerated for reasons of clarity). An optional second flap 208 extending into the interior 211 of the bag 200 is attached to the end boundary edge 209 of the first side wall by means of a second fold 210. The end edge 222 of the second flap 208 is illustrated by a dotted line in Figures 5 and 6.

The closure flap 205 is adhered to the first side wall 201 by means of a peelably attached region or regions 215. The peelably attached region 215 may take a variety of forms but preferably comprises a peelable adhesive. The peelable adhesive may be applied to either the surface of the first side wall 201 or the surface of the closure flap 205, or to both. The peelable adhesive may be a pressure sensitive adhesive which comprises two non-tacky components, a first of which is applied to the closure flap and the second of which is applied to the first side wall. When the two components are brought together and pressure is applied, an adhesive bond is formed.

Alternatively the peelable adhesive may be a permanent or non-permanent adhesive or a hot melt or solvent adhesive applied to either the surface of the first side wall 201 or the surface of the closure flap 205 or both.

The region or regions of peelable adhesive 215 may be of a number of different suitable shapes. For example, the region 215 may occupy the whole area of the first side wall 201 which lies underneath the closure flap 205, or only a part of that region. Regions of peelable adhesive

may be in the form of strips or stripes extending laterally across the first side wall or extending diagonally or in curved (wave-like) paths. The regions of peelable adhesive may also be intermittent across the first side wall.

It is preferred that the region or regions of peelable adhesive are such that it is not possible to trace a path along the surface of the first side wall 201 from its end boundary edge 209 to the edge of the closure flap 213 which does not cross a region of peelable adhesive. Where, as described further below, only a portion of the closure flap is peeled away, the above-mentioned path may apply only to that portion.

It is particularly preferred that a continuous region of peelable adhesive is provided substantially parallel to and adjacent to the end boundary edge 209 of the first side wall 201, as may be particularly seen in Figure 5. This construction assists in ensuring the integrity of the closure.

The region or regions of peelable adhesive 215 may also be selected to be re-sealable, so that the bag may be re-closed after opening by means of the region or regions of peelable adhesive 215.

For example, the transfer of permanent or non-permanent adhesive, hot melt or solvent adhesive applied to either the surface of the first side wall 201 or the surface of the closure flap 205 or both may also occur on opening the bag thereby allowing the bag to be re-sealed.

Alternative constructions for the peelably attached region 215 also include the use specific adhesives whose adhesive properties vary according to the surrounding temperature, thereby allowing the bags to be used at extremes of temperature. In some cases, these adhesives may not be peelable at room temperature.

Alternative constructions for the peelably attached region 215 also include the use of adhesives which are frangible.

- 10 Alternative constructions for the peelably attached region 215 include peelable heat welded and peelable heat sealed regions. In order to provide a peelable heat weld or heat seal, the strength of the weld or seal may need to be weakened to some extent. This may be achieved by
- 15 interposing some sort of contaminant between the materials to be welded or sealed. The contaminant may be chosen from a wide variety of materials but examples include inks and lacquers or a third film layer which welds less strongly to the layers of material than the
- 20 materials weld to themselves.

Referring specifically now to Figures 1 and 2, the illustrated bag may be opened simply by peeling back the closure flap 205 through the peelably attached regions. In this and other embodiments the optional second flap 208 assists in maintaining the integrity of the closure when the bag 200 is filled with its contents. Second flap 208 is effective in preventing the contents of the bag from penetrating to an excessive extent between the first side wall 201 and the closure flap 205 around the region of the first fold 207, which might otherwise cause

distortion the side wall 201 and/or the closure flap 205 so that they could become separated at the peelable region 215. The bag closure could then be breached, allowing the contents to leak or spill.

5 In particularly preferred variations of the inventions the closure flap 205 is provided with one or more lines of weakness along which the closure flap 205 may be torn in order to open the bag and expose its interior. The lines of weakness preferably take the form of
10 perforations in the closure flap 205.

Referring now to Figures 3 and 4, a bag is illustrated incorporating only one line of weakness. The line of weakness 216A is in the form of an arc extending from points W-W near first fold 207 toward the edge 213 of
15 closure flap 205 and defines a portion 219 of the closure flap which may be peeled away along the line of weakness 216A to open the bag.

In order to facilitate opening of the bag, the embodiment illustrated in Figure 4 includes a finger hole 250 by
20 means of which the closure flap 205 may be gripped in order to begin tearing along the line of weakness 216A. As indicated in Figure 4, a line of permanent adhesive 240 may be provided between end edge 213 of the closure flap and the line or lines of weakness 216A in order to
25 assist in retaining the closure flap 205 prior to opening the bag 200.

In an alternative embodiment of the invention to that illustrated in Figure 4 it may be desirable to refrain

from the use of adhesive in the region of the closure flap defined by the line of weakness 216A.

Referring now to Figures 5 to 10 variations of the bags of the invention are illustrated in which the bags include two lines of weakness 216A, 216B which define a portion 219 of the closure flap which may be peeled away along the lines of weakness to open the bag. Additional features which may be incorporated into other embodiments of the invention are also illustrated. In this respect, the closure flap 205 may be sealed to the first side wall 201 at its end edge 213 by means of seals 212A and 212B (Figure 6) and at its side edges 205A, 205B (Figure 5), but these are not always essential. Seals 212A and 212B are preferably heat seals however, adhesive seals, utilising permanent or non-permanent adhesive may also be employed. Mitre seals 217 may be formed across the corners of the bag, preferably by heat sealing. The mitre seals 217 serve to create soft corners on the bag when filled with product, which is preferred for palletisation of the bags. The corners of the bag beyond the mitre seals 217 may be removed if desired.

Indicated in Figures 5 and 6 by dotted lines 216A, 216B the lines of weakness extend from the end edge 213 of the closure flap through the adhesive region 215. Preferably, the lines of weakness 216A, 216B do not extend beyond the peelable region 215 towards the fold 207 in order to preserve the integrity of the closure and to prevent product leakage. When it is desired to empty the contents from the bag, the bag is opened by means of closure flap 205. Specifically, when the end edge 213 of

the closure flap 205 is gripped in region 219 and pulled, the closure flap 205 tears along the lines of weakness 216A, 216B and a region 219 is separated from the remaining parts 220 of the closure flap 205. Especially where as in Figure 6 the end edge 213 of the closure flap 205 is sealed to the first side wall 201 by means of seals 212A and 212B, the unsealed portion 214 acts as a finger tab by means of which the closure flap 205 can be gripped. The region 219 can then be separated by tearing along the lines of weakness 216A, 216B as far as the peelable region, so that the bag attains the open configuration as shown in Figures 9 and 10. Where in any of the embodiments of the invention a peelable adhesive is used, the adhesive is selected so that its cohesive strength is less than its adhesive strength, so that as the end edge 213 or finger tab 214 continue to be pulled the region 219 is separated from the first side wall 201 in the peelable region 215 without substantial damage occurring to the region 219 or the first side wall 201. That is, the first side wall 201 and the region 219 are not torn (except along the lines of weakness 216A, 216B) or significantly distorted and the first side wall 201 remains functionally intact. When the lines of weakness have been torn along their full length, the region 219 can be opened out at fold 207 so that it can act as a dispensing spout for contents of the bag dispensed through mouth 221 formed between first side wall 201 and second side wall 202, as may best be seen from Figures 9 and 10. In Figures 9 and 10, various features such as mitre seals 217 and adhesive region(s) 215 have been omitted for improved clarity.

In Figures 3 to 10, the portion of the closure flap 205 outside the peelable portion 219, may be attached to the first side wall 201 by non-peelable means such as, for example, a non-peelable heat seal or a non-peelable adhesive.

The second flap 208 may also be used to provide means for re-closing the bag after opening. In particular, the second closure flap 208 may be provided with a layer of adhesive (not illustrated) which may be used to adhere the second flap 208 to the inner face of the first side wall 202. Depending on the intended use of the bag, the adhesive applied to the second flap 208 may be peelable or permanent (non-peelable). A peelable adhesive may be employed to provide an even more secure closure for the bag, before opening. More preferably the adhesive (peelable or non-peelable) applied to the second flap 208 may initially be covered by a protective tape such as of a plastics material or a coated paper. The protective tape prevents the adhesive from adhering the second flap 208 to the second side wall 202. When it is desired to re-close the bag, the protective tape is simply peeled away to expose the adhesive, which may then stick to the second side wall 202. This latter construction is particularly advantageous when the bags of the invention are used for containing mail-order goods, as will be described more fully below.

Referring now to Figures 11 and 12, a still further variation of the invention is illustrated in which the bag provided with a third flap 280 at the end of the bag distant from the first fold 207. The third flap may

depend from the first or second side walls 201, 202 and is attached to the respective second or first side walls 202, 201 by means such as adhesive region 300. The adhesive is preferably a peelable adhesive. The third
5 flap 280 includes a fold 290.

In the use of this flap, goods may first of all be inserted into the bag via initially open end 218 which end 218 is then closed by means of the third flap 280. The goods are then transported or stored as required in
10 the bag and, when required are accessed by peeling back peelable portion 219, as previously described. If the goods need to be re-packed in the bag, such as for example, unwanted goods which are to be returned to the mail order supplier, they may be placed in the bag again
15 through the opened end near peelable portion 219. The opened end is then re-sealed by means of adhesive provided on second flap 208. Additionally or alternatively adhesive on the peelable portion 219, may be used to re-seal the bag. In this case, the peelable
20 adhesive may be re-sealable and/or an additional area of adhesive may be provided on the portion 219, which is initially covered by a protective tape, which tape is removed before re-sealing. When access to the goods is again required, such as for returned goods at the mail
25 order company, the bag may be opened by peeling or tearing back third flap 280.

Claims:

1. A plastic bag comprising first and second confronting side walls having substantially coincident end boundary edges; and
 5 a closure flap overlying an end region of the first side wall, depending from the end boundary edge of the second side wall, including a first fold substantially parallel to and adjacent to the end boundary edges and having a region which is peelably attached to the first side wall, the first and
 10 second side walls being attached along their side edges and wherein at least a portion of the closure flap may be peeled away from the first side wall across the peelably attached region to expose the
 15 interior of the bag such that the first side wall remains functionally intact.
2. A plastic bag according to claim 1 wherein said portion which may be peeled away is defined by at least one line of weakness in the closure flap
 20 extending through the peelably attached region and along which the closure flap is torn to expose the interior of the bag.
3. A plastic bag comprising first and second confronting side walls having substantially coincident end boundary edges; and a closure flap
 25 overlying an end region of the first side wall, depending from the end boundary edge of the second side wall, including a first fold substantially parallel to and adjacent to the end boundary edges

- and having a region which is attached to the first side wall; the first and second side walls being attached along their side edges; and wherein the closure flap includes at least one line of weakness defining a portion of the flap which does not include any part of the region which is attached to the first side wall and which can be opened by tearing along the line of weakness to expose the interior of the bag.
- 5
- 10 4. A plastic bag as claimed in claims 1,2 or 3 wherein the closure flap includes a line of weakness in the form of an arc extending from points adjacent the end boundary edge of the first side wall towards the end edge of the cover flap distant from the first
- 15 fold.
5. A plastic bag as claimed in claims 2 to 4 including at least one finger hole formed in the closure flap on the line of weakness by means of which the closure flap may be gripped for tearing.
- 20 6. A plastic bag as claimed in claim 1 wherein said portion which may be peeled away is defined by at least two lines of weakness in the closure flap along which the closure flap is torn to expose the interior of the bag.
- 25 7. A plastic bag as claimed in claim 6 wherein lines of weakness terminate in one or more finger holes formed in the closure flap, by means of which the closure flap may be gripped for tearing.

8. A plastic bag as claimed in claim 6 wherein the lines of weakness extend from the edge of the closure flap distant from the first fold through the peelably attached region to the end boundary edge of the first side wall.
9. A plastic bag as claimed in claim 8 wherein the lines of weakness are substantially straight and substantially parallel to the side edges of the bag.
10. A plastic bag as claimed in claim 8 wherein the ends of the lines of weakness proximate the end boundary edge of the first wall are spaced further apart than the ends of the lines of weakness at the end of the closure flap.
11. A plastic bag as claimed in claim 10 wherein the ends of the lines of weakness at the end edge of the closure flap are so spaced apart as to define a finger tab by means of which the closure flap may be gripped for tearing.
12. A plastic bag as claimed in any of claims 8 to 11 wherein the closure flap is sealed to the first side wall along portions of its end edges extending from respective lines of weakness to the side wall edges.
13. A plastic bag as claimed in any of claims 1, 2 or 4 to 12 wherein the portion of the closure flap which may be peeled away is attached to the first side wall by means of a peelable adhesive.
14. A plastic bag as claimed in any of claims 1, 2 or 4 to 12 wherein the portion of the closure flap which

may be peeled away is attached to the first side wall by means of a peelable heat weld or peelable heat sealed region.

- 5 15. A plastic bag as claimed in any of claims 2 to 14 wherein the line or lines of weakness are so shaped that the portion of the closure flap defined thereby adopts the shape of a dispensing spout when torn along the line or lines of weakness.
- 10 16. A plastic bag according to any of claims 2 to 15 wherein the lines of weakness are perforations formed in the closure flap.
- 15 17. A plastic bag as claimed in any preceding claim wherein the bag further comprises a second flap depending from the end boundary edge of the first side wall along a second fold and extending into the interior of the bag.
18. A plastic bag according to claim 17 wherein the second flap is attachable by means of an adhesive to the inside of the second side wall.
- 20 19. A plastic bag according to claim 18 wherein the said adhesive is a peelable adhesive.
20. A plastic bag as claimed in any preceding claim wherein the end of the bag distant from the first fold is open for filling the bag.
- 25 21. A plastic bag as claimed in any of claims 1 to 19 wherein the end of the bag distant from the first fold is closed by means of a heat seal.

22. A plastic bag as claimed in any preceding claim further comprising mitre seals extending from respective side edges of the bag near the end edge of the closure flap to the first fold, by means of which the closure flap, the first side wall and the second side wall are sealed together.
23. A plastic bag as claimed in any of claims 1, 2 or 4 to 21 wherein there is no path across the portion of the closure flap which may be peeled away from the boundary of the said portion nearest to the end boundary edge of the first side wall to the boundary of the said portion distant from the first fold which does not pass through a peelably attached region.
24. A plastic bag as claimed in any of claims 1, 2 or 4 to 23 wherein a path along the first wall substantially parallel to and adjacent to the end boundary edge thereof lies entirely in a peelably attached region, at least within the peelable portion of the closure flap.
25. A plastic bag as claimed in any preceding claim wherein the bag is further provided with a third flap overlying and peelably attached to the first or second side wall, which third flap depends from a second end boundary edge of the second or first side wall at the end of the bag distant from the first fold and includes a third fold substantially parallel to and adjacent to the said second end boundary edge.

26. A bag substantially as hereinbefore described with reference to and as illustrated in any of Figures 1 to 12.

ABSTRACT:

BAGS OF EASY OPEN CONSTRUCTION

The invention provides an easily openable bag having first and second side walls and a closure flap joined to one of the walls at a fold and overlying the second wall. 5 The flap is peelably sealed (such as by means of a peelable adhesive) to the second wall. A line or lines of weakness may also be provided in the flap along which the bag may be torn open.

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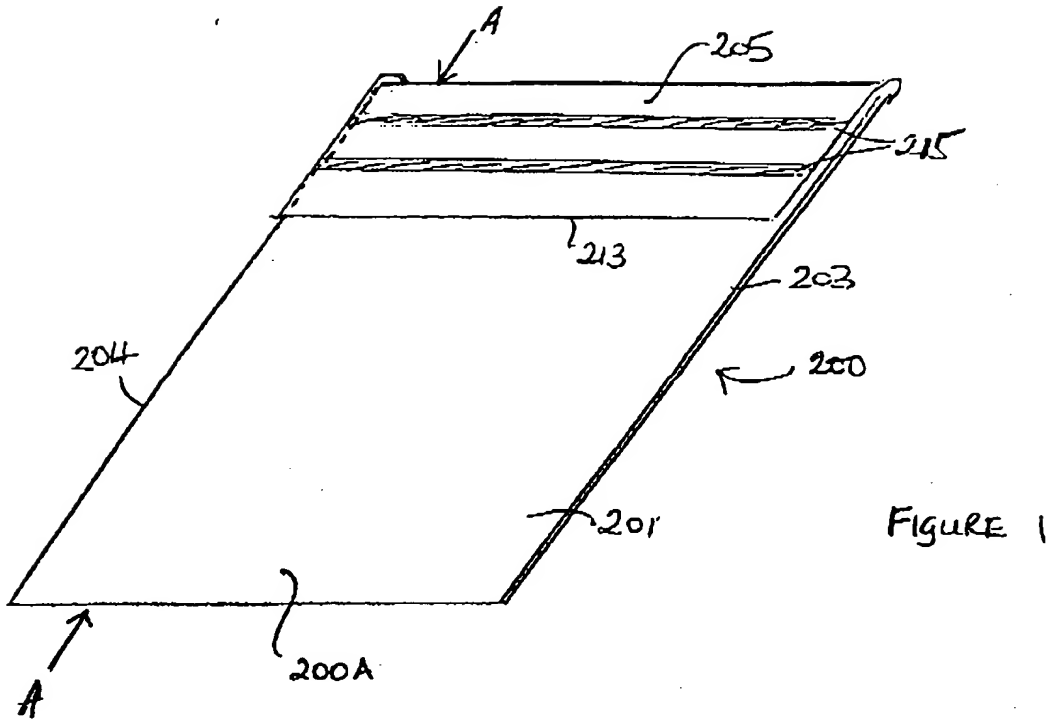


FIGURE 1

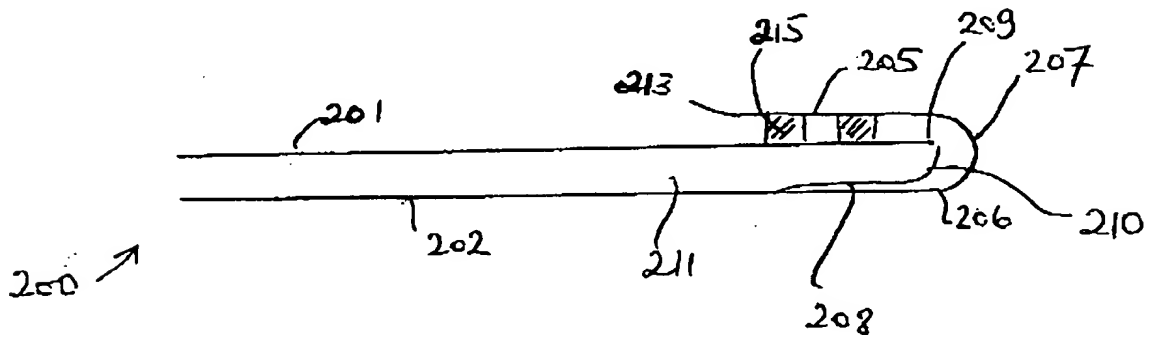


FIGURE 2

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2/8

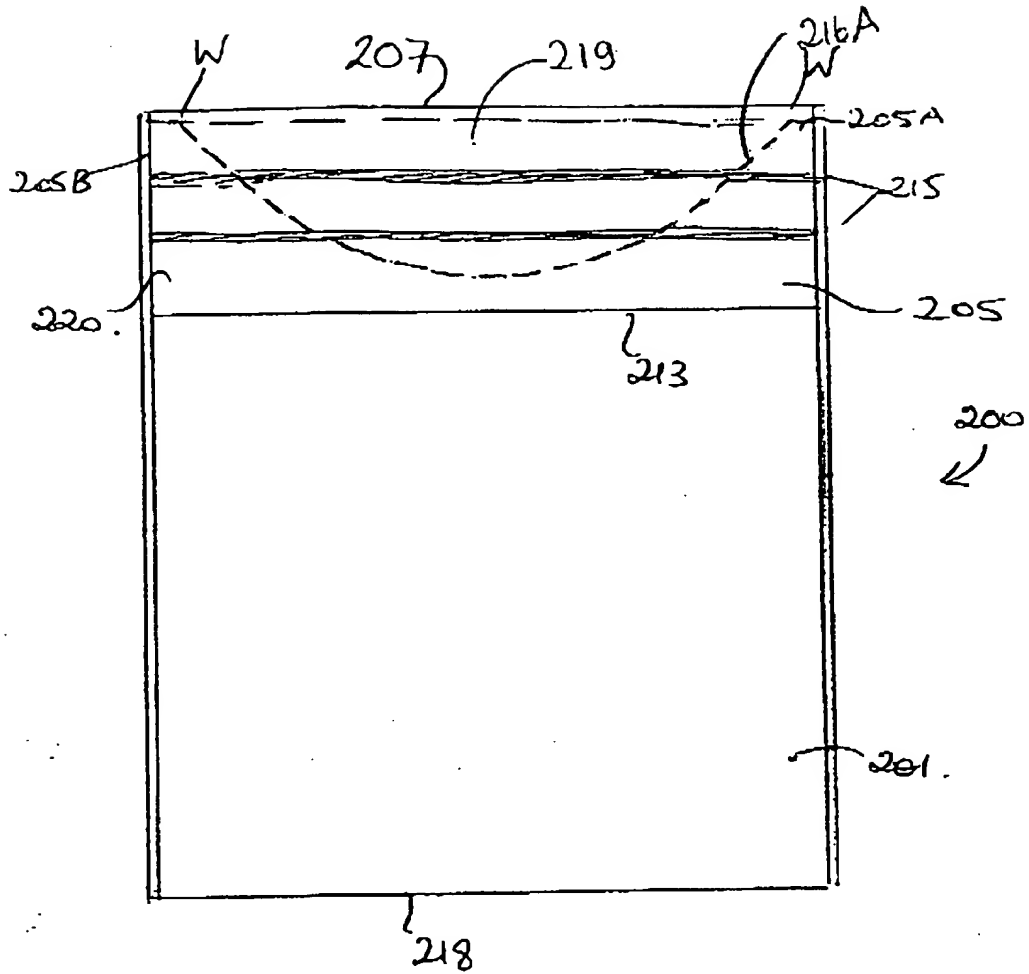


Figure 3

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3/8

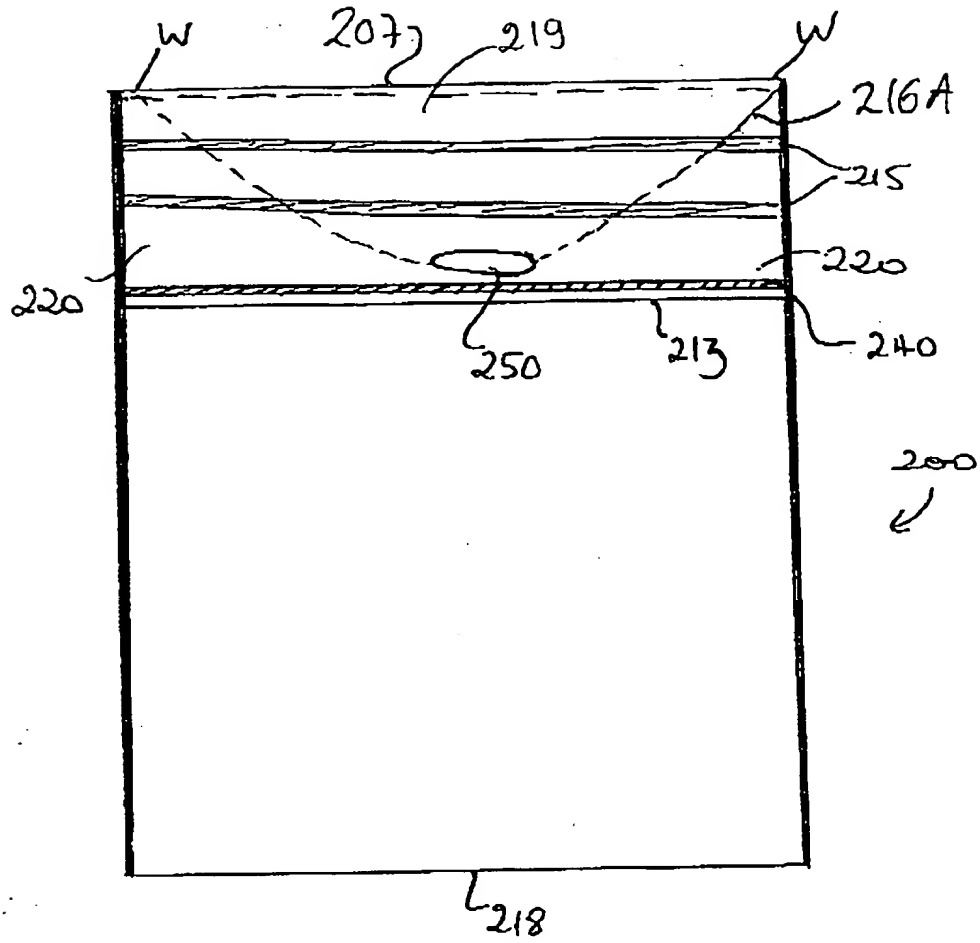


FIGURE 4

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FIG. 5

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5/8

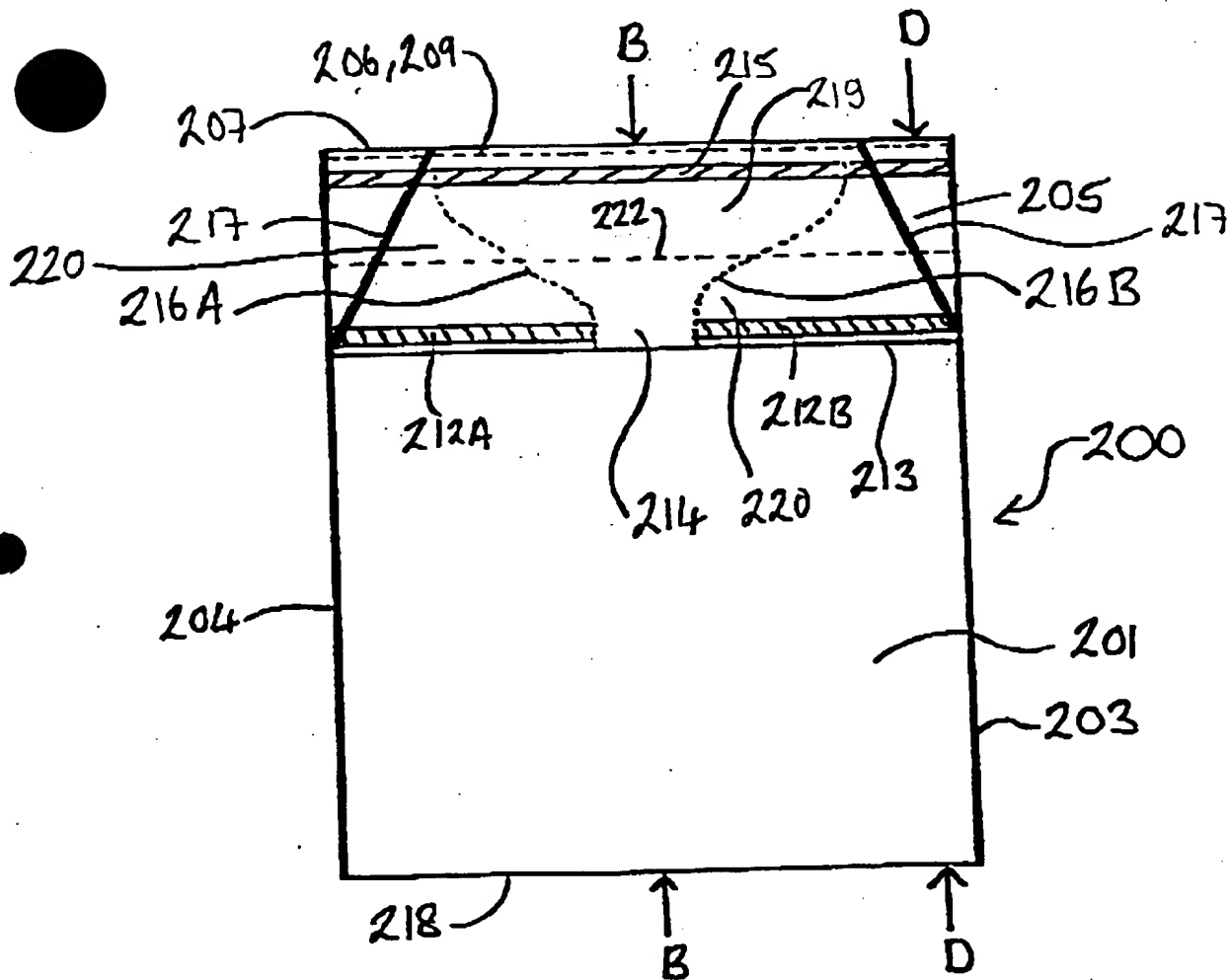


Figure 6

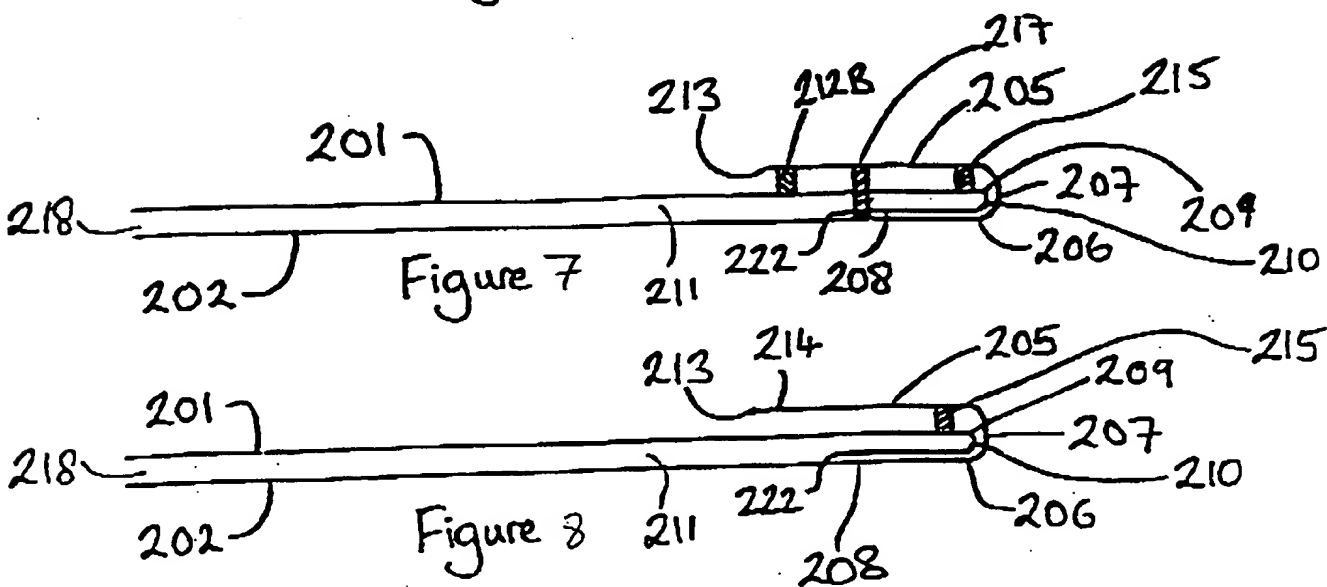


Figure 7

Figure 8

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6/8

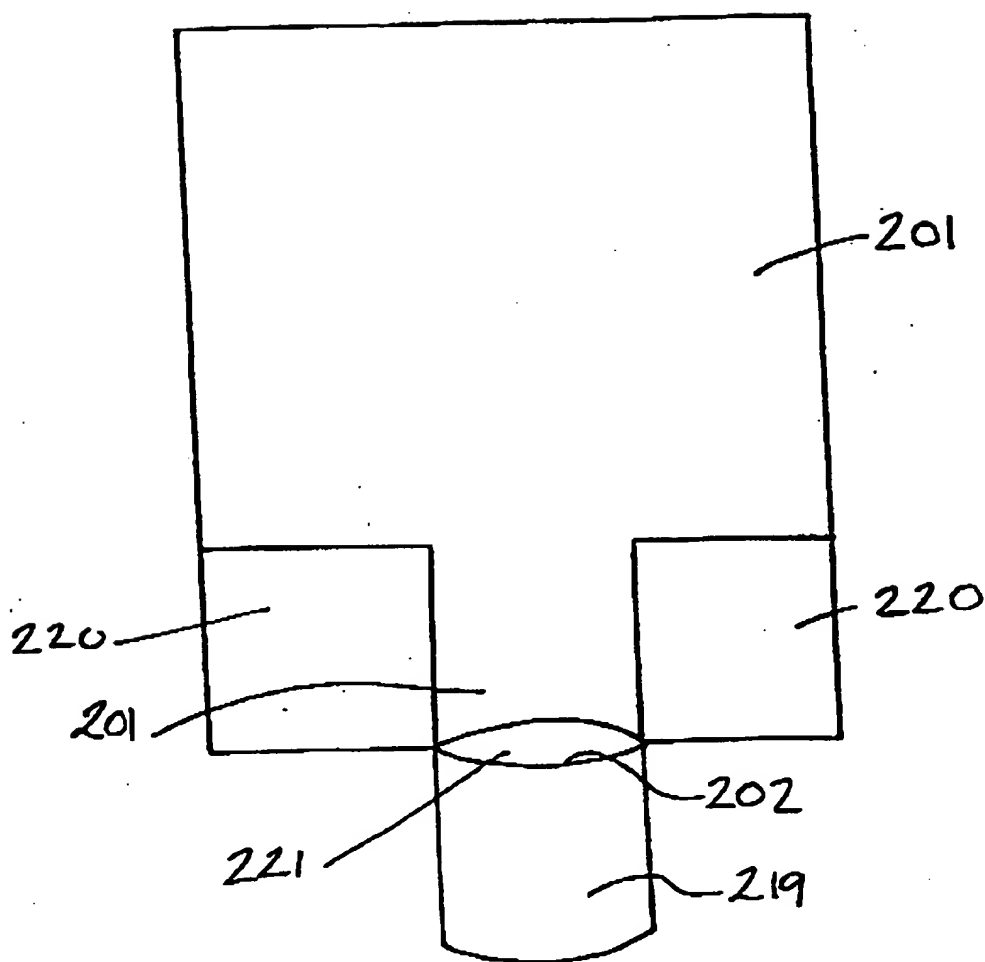


Fig 9.

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7/8

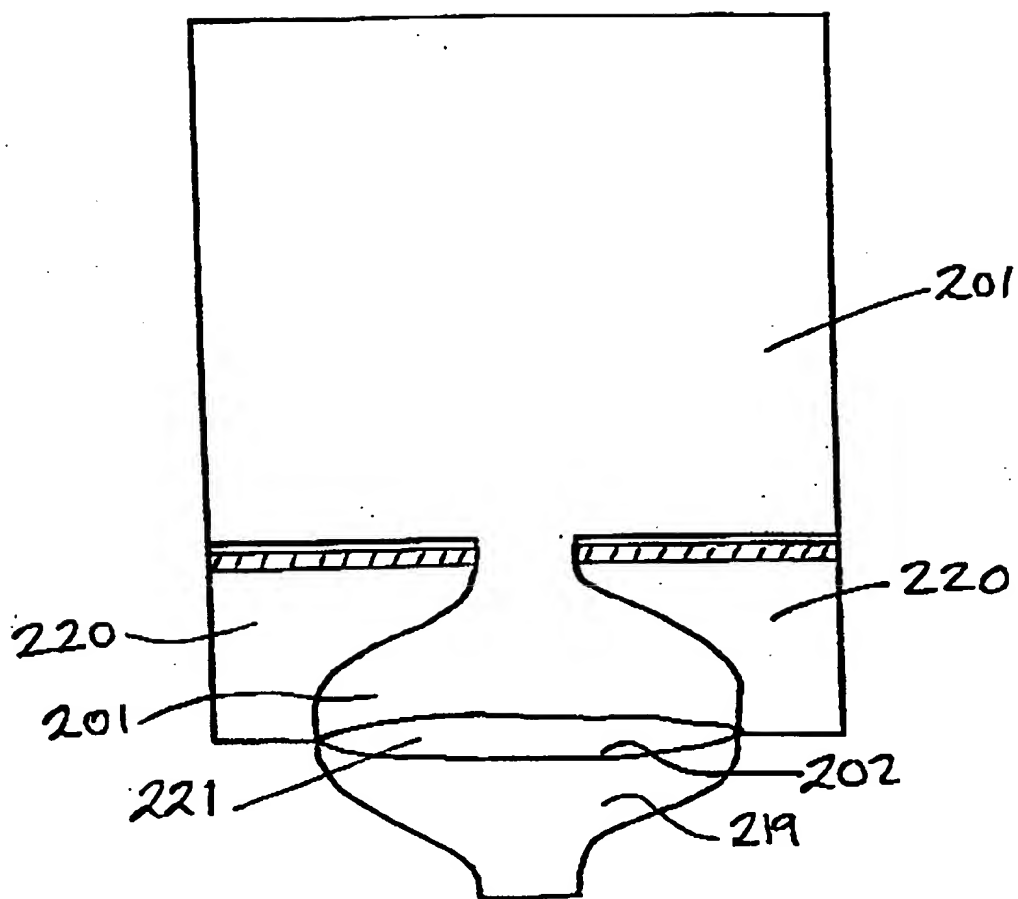


Figure 10

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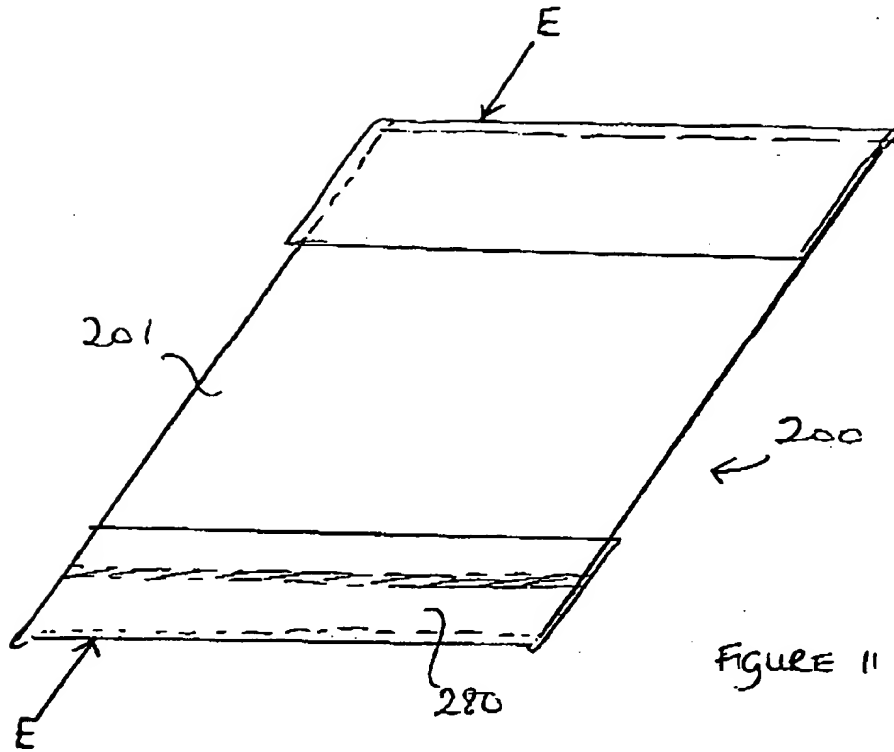


FIGURE 11

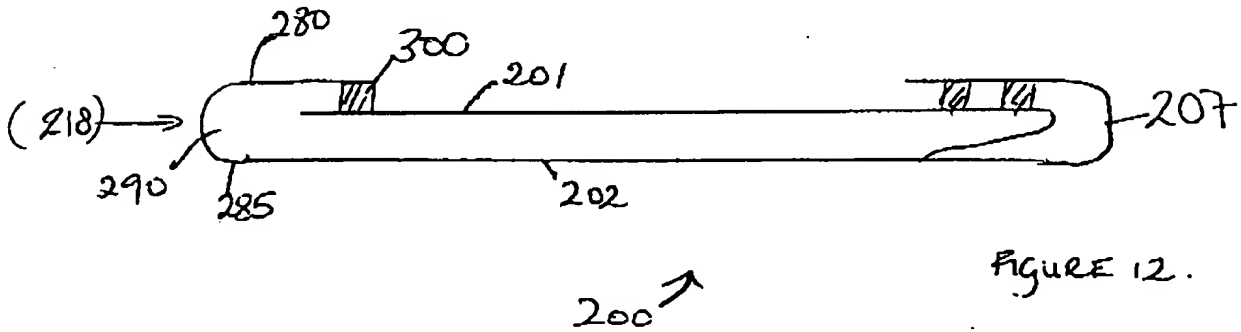


FIGURE 12.

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